(No Model.)

W. KEYWOOD.

AUTOMATIC AIR BRAKE.

No. 500,910. Patented July 4, 1893.

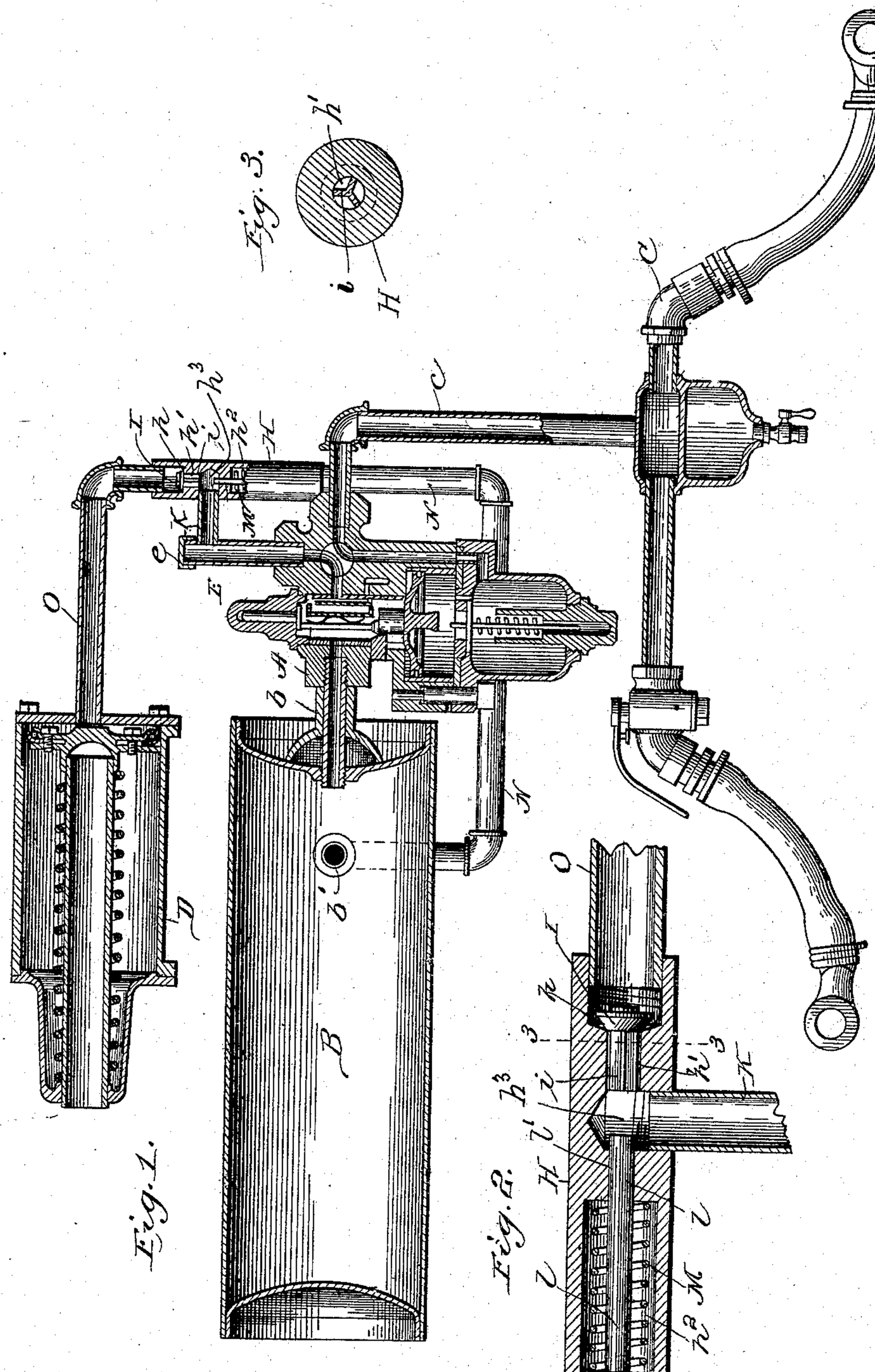

Fig. 1.

Fig. 2.

Fig. 3.

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AUTOMATIC AIR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 500,910, dated July 4, 1893.

Application filed August 4, 1892. Serial No. 442,171. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KEYWOOD, a citizen of the United States, residing at Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Automatic Air-Brakes, of which the following specification, taken in connection with the accompanying drawings, is a full, clear, and exact description, such as will enable those skilled in the art to make and use the same.

My invention relates particularly and is herein shown applied, to that style of brake known as the Westinghouse automatic brake; and my invention has for its object to avoid a very serious objection to this style of brake as now commonly manufactured, and consists in novel features of construction hereinafter described and claimed.

In the accompanying drawings:—Figure 1 is a sectional view of a brake mechanism embodying my invention. Fig. 2 is an enlarged sectional detail view. Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2.

A represents the triple-valve mechanism, B the auxiliary reservoir connected to one port of said valve by a pipe *b;* C is the train-pipe connected to another port of said valve by the branch pipe *c;* and D is the brake cylinder connected with the third port of the triple valve, and also connected with the auxiliary reservoir in the manner now to be explained.

E is a tube extending from the third port of the triple valve and provided with a cap *e* for closing its upper end.

H is a valve casing provided at one end with an enlarged opening in which is formed a seat *h* for the valve I, and a contracted bore or opening *h'* extending from said enlarged opening in which is supported the winged extension *i* of the valve.

K is a branch tube or pipe tapping the tube E near its top and also tapping the valve casing H below the contracted opening *h'* and extending into an intermediate chamber h^3. At the opposite lower end of the valve casing H is formed an enlarged opening h^2 in which operates a controlling piston L provided with a rod *l*, which passes through a contracted central bore *l'*, of said casing and is adapted to come in contact with the extension *i* of the valve I and raise the valve from its seat at the proper time.

M is a spiral spring surrounding the rod *l* and impinging at one end against the inner end of the piston L, and at its opposite end against an internal shoulder on the valve casing for holding the piston and rod normally in their outer inoperative position. The lower end of the valve casing H is connected with the auxiliary reservoir at *b'* by means of the branch pipe N which is secured therein and supports the piston L; and the upper end of the valve casing is connected to the brake cylinder by means of the branch pipe O, as clearly shown in the drawings.

The operation of the device is as follows:—The auxiliary reservoir being stored in readiness for applying the brakes, the air pressure is reduced in the train-pipe, which shifts the triple valve and allows the air to pass from the auxiliary reservoir into the brake cylinder and apply the brakes in a manner well understood. It is next desired to restore the pressure of the auxiliary reservoir without releasing the brakes. This is done by restoring the pressure in the train-pipe, which shifts the triple valve and opens connection between the train-pipe and auxiliary reservoir and between the valve casing H and exhaust of the triple valve. Now as ordinarily constructed the air in the brake cylinder would immediately pass off through the exhaust and allow the brakes to be released. But in my improved arrangement, the check valve I obstructs the passage back from the brake cylinder and holds the brakes in applied position until the auxiliary reservoir has been recharged to the proper pressure. When the air in the auxiliary reservoir reaches the proper pressure, the piston L will be raised thereby against the pressure of the spiral spring M, which will cause the rod *l* to raise the valve I from its seat and allow the air from the brake cylinder to escape and the brakes to be released, for the spiral spring M is so tensioned as to allow the piston to be pushed in and raise the valve I from its seat only when the desired air pressure is secured in the auxiliary reservoir.

The above described mechanism aids materially to make an effective automatic brake.

Having thus fully described the nature of my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

The combination, with the brake cylinder and the pipe connected therewith, the auxiliary reservoir and the pipe connected therewith, and the triple-valve; of the casing located between the pipes, formed with an enlarged opening at one end, providing a valve-seat, an enlarged opening at the other end providing a piston-chamber, an intermediate chamber, a contracted bore beneath the valve-seat and a contracted bore above the piston-chamber, the check-valve, exposed to brake cylinder pressure, having a winged extension, a piston, exposed to auxiliary reservoir pressure, having a rod adapted to impinge against the extension, a tension spring located in the piston-chamber, and a tube connecting the triple-valve with the intermediate chamber in the casing; whereby the check-valve obstructs the passage back from the brake cylinder and holds the brakes in applied position until the auxiliary reservoir has been recharged to the proper pressure; substantially as described.

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